GFK-2961

November 2015

Analog Output Modules EP-4164, EP-4264

Analog Output Module

GE provides RSTi-EP analog output modules with up to 4 analog outputs at +/-10 V, +/-5 V, 0-10 V, 0-5 V, 2-10 V, 1-5 V, 0-20 mA or 4-20 mA. The resolution is 16 bit per channel. An output can be connected to each connector, the internal switching is carried out automatically. The output range is defined using parameterization. A status LED is assigned to each channel. The outputs are supplied with power from the output current path (I_{OUT}).

The EP-4264 module provides individual channel diagnosis with channel related error messages.

Each module features a type plate, which includes identification information, the key technical specifications, and a block diagram. In addition, a QR code allows for direct online access to the associated documentation. The software for reading the QR code must support inverted QR codes.

Markers are available as accessories for labelling equipment. Each I/O module can be labelled using the markers to ensure clear identification when replacing individual modules or electronic units.

The RSTi-EP station is usually installed on a horizontally positioned DIN rail. Installation on vertically positioned DIN rails is also possible.

The outputs as well as the sense-lines of the AO modules must not be used as power outputs.

Modules should to be allowed to de-energize for a minimum 10 seconds after power down, prior to starting any maintenance activity.

Refer to the *RSTi-EP Slice I/O User Manual* (GFK-2958) for additional information.

Refer to the *RSTi-EP Power Supply Reference Guide*, a software utility available on PME V9.00, for detailed power-feed requirements.

Module Features

- Control up to four analog outputs
- Module diagnosis
- *Spring style* technology for ease of wiring
- DIN rail mounted
- Double-click installation for positive indication of correct installation
- Supports indirect firmware update through the network monitor
- Supports hot insertion and extraction

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Ordering Information

Module	Description
EP-4164	Analog Output, 4 Channels Voltage/Current 16 Bits 2, 3, or 4-Wire
EP-4264	Analog Output, 4 Channels Voltage/Current 16 Bits with Diagnostics 2, 3, or 4-Wire

Specifications

	EP-4164	EP-4264
System Data		
Data	Process, parameter, and diagnostic data depend on the network adapter used.	
Interface	RSTi-EP system bus	
System bus transfer rate	48 Mbps	
Potential isolation	Channel/system bus = yes Channel/channel = no	
Outputs		
Number	4	
Output levels	1. Voltage (0 – 5 V, ±5 V, 0 – 10 V, ±10 V, 1 – 5 V, 2 – 10 V) 2. Current (0 – 20 mA, 4 – 20 mA)	
Response time	1 ms for 4 channels	
Resolution	16 bits	
Accuracy	0.1 % FSR max., 0.05 % FSR typ.	
Temperature coefficient	20 ppm voltage / 31 ppm current measurement / K	
Max. error between T_{min} and T_{max}	±220 ppm FSR	
Monotony	Yes	
Crosstalk between the channels	±0.001 % FSR max.	
Repeat accuracy	< ±1 mV eff.	
Output ripple	max. 0.001 %	
Voltage load resistance	≥ 1 kΩ (at > 50°C (122 °F) max ambient temperature, total sensor current of 10 mA per channel but 25 mA per module)	
Current load resistance	≤ 600 Ω including field cable resistance	
Actuator connection	2-wire (current and voltage; automatic detection), 4-wire (voltage)	
Short-circuit-proof	Yes	
Module diagnosis	Yes	
Individual channel diagnosis	No	Yes
Substitute value	Yes	
Can be used with EP-19xx module	Yes	
Supply		
Supply voltage	20.4V – 28.8V	
Current consumption from system current path I_{SYS}	8 mA	
Current consumption from output current path I_{OUT}	85 mA	

General data		
Operating temperature	-20°C to +60°C (-4 °F to +140 °F)	
Storage temperature	-40°C to +85°C (-40 °F to +185 °F)	
Air humidity (operation/transport)	5% to 95%, noncondensing as per IEC 61131-2	
Width	11.5 mm (0.45 in)	
Depth	76 mm (2.99 in)	
Height	120 mm (4.72 in)	
Weight	83 g (2.93 oz)	98 g (3.47 oz)

Current Demand for Analog Output Modules

Product	I_{SYS}	I_{IN}	I_{OUT}	I_S	I_L
EP-4164	8 mA	--	85 mA	--	--
EP-4264	8 mA	--	85 mA	--	--

I_{SYS} Current consumption from the system current path
I_{IN} Power consumption from input current path
I_{OUT} Power consumption from output current path
I_S Current demand of the connected sensors
I_L Current demand of the connected actuators
x Must be included when calculating the power supply

LEDs

LED	EP-4164	EP-4264
Module Status	**Green:** Communication over the system bus **Red:** Module System Fault or Diagnostic Fault	**Green:** Communication over the system bus **Red:** Module System Fault or Diagnostic Fault
1.1	**Red:** Channel 0 at voltage output: overload short-circuit, at current output: shunt resistance too high or line break detected	**Red:** Channel 0 at voltage output: overload short-circuit, at current output: shunt resistance too high or line break detected
1.2	--	--
1.3	--	--
1.4	--	--
2.1	**Red:** Channel 1 at voltage output: overload short-circuit, at current output: shunt resistance too high or line break detected	**Red:** Channel 1 at voltage output: overload short-circuit, at current output: shunt resistance too high or line break detected
2.2	--	--
2.3	--	--
2.4	--	--
3.1	**Red:** Channel 2 at voltage output: overload short-circuit, at current output: shunt resistance too high or line break detected	**Red:** Channel 2 at voltage output: overload short-circuit, at current output: shunt resistance too high or line break detected
3.2	--	--
3.3	--	--
3.4	--	--
4.1	**Red:** Channel 3 at voltage output: overload short-circuit, at current output: shunt resistance too high or line break detected	**Red:** Channel 3 at voltage output: overload short-circuit, at current output: shunt resistance too high or line break detected
4.2	--	--
4.3	--	--
4.4	--	--

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Field Wiring

The connection frame can take up to four connectors, and four wires can be connected to each connector. Those four connectors are shown in the following figure. The *Spring style* technology allows either finely stranded or solid wire conductors with crimped wire-end ferrules or ultrasonically welded wires, each with a maximum cross-section of 1.5 mm² (16 guage), to be inserted easily through the opening in the clamping terminal without having to use tools. To insert fine stranded wires without wire-end ferrules, the pusher must be pressed in with a screwdriver and released to latch the wire.

Connector Block

Connector Specifications:

- conductor cross-section 0.14 to 1.5 mm² (26 – 16 guage)
- max. ampacity: 10 A
- 4-pole

The modules do not have a fused sensor/activator power supply. All cables to the connected sensors/actuators must be fused corresponding to their conductor cross-sections (as per Standard DIN EN 60204-1, section 12).

Refer to the *RSTi-EP Slice I/O User Manual* (GFK-2958) for additional information.

For technical assistance, go to http://support.ge-ip.com.

Installation in Hazardous Areas

- EQUIPMENT LABELED WITH REFERENCE TO CLASS I, GROUPS A, B, C & D, DIV. 2 HAZARDOUS AREAS IS SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C, D OR NON-HAZARDOUS AREAS ONLY

WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2;

WARNING - EXPLOSION HAZARD - WHEN IN HAZARDOUS AREAS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES; AND

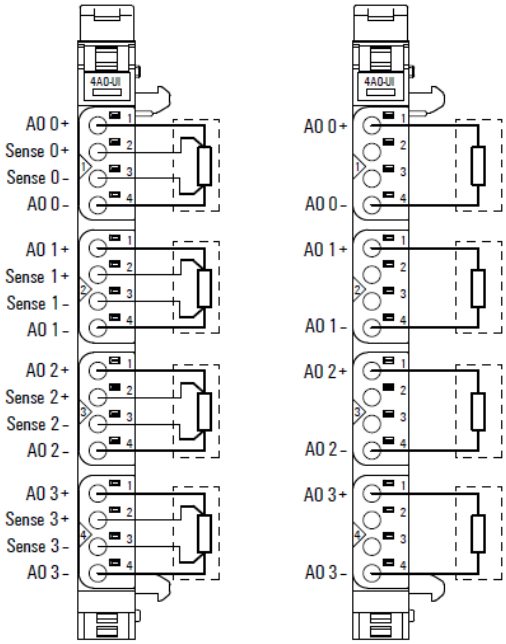
WARNING - EXPLOSION HAZARD - DO NOT CONNECT OR DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NONHAZARDOUS.

ATEX Marking

Ⓔx II 3 G Ex nA IIC T4 Gc

Ta: -20°C to +60°C (-4° F to +140 °F)

Connection Diagrams



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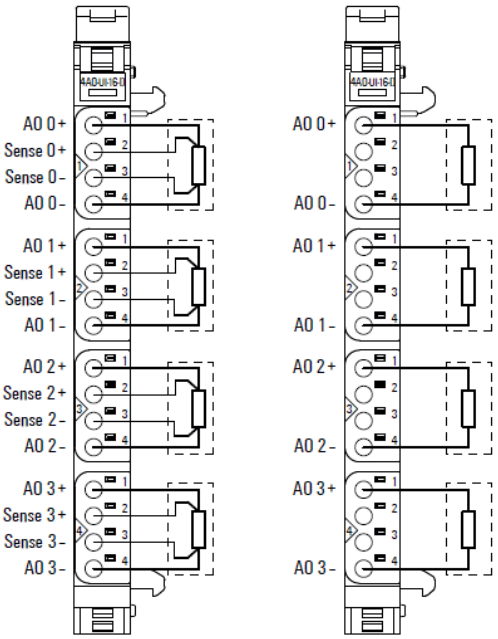

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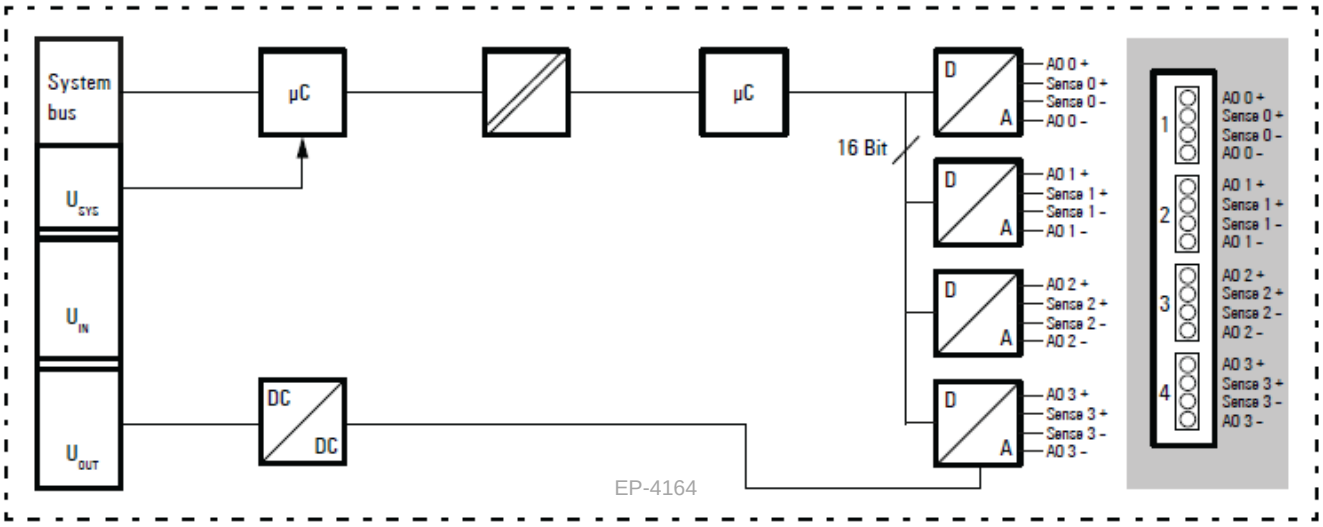
Connection Block Diagrams



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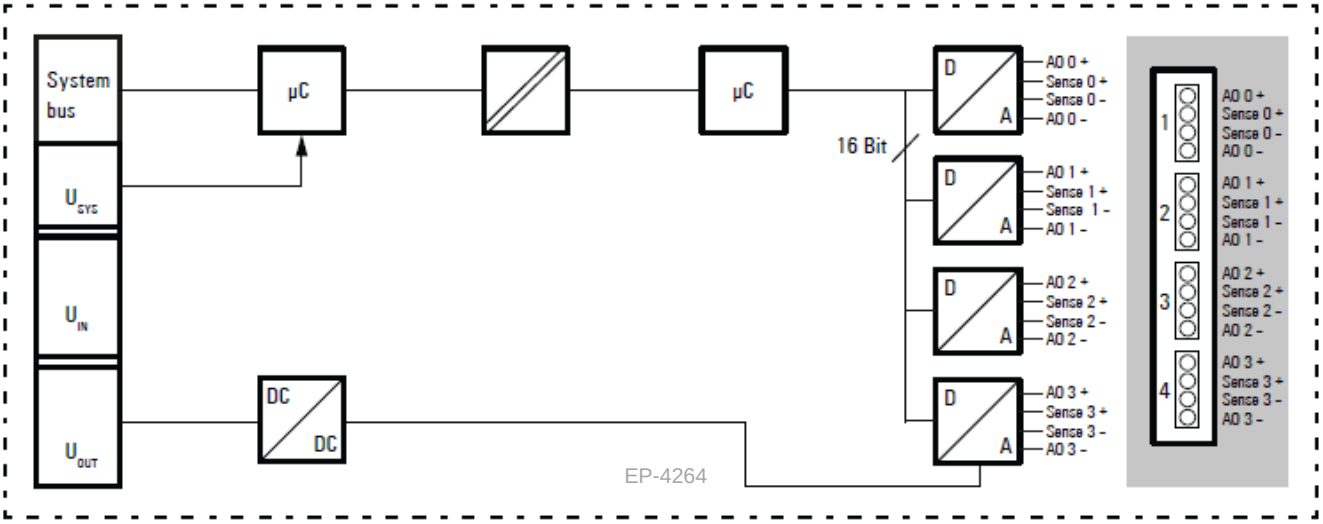

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Release History

Catalog Number	Firmware Version	Date	Comments
EP-4164, EP-4264	01.00	Nov-2015	Initial Release

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Important Product Information for this Release

Updates

Initial Release

Funcional Compatibility

Initial Release

Problems Resolved by this Release

None – Initial Release

New Features and Enhancements

None – Initial Release

Known Restrictions and Open Issues

None

Operational Notes

None

Product Documentation

RSTi-EP Slice I/O Module User Manual (GFK-2958)

RSTi-EP Slice I/O Functional Safety Module User Manual (GFK-2956)

GE Intelligent Platforms

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